

First Description of the male of *Bandona boninensis* Suzuki 1974 (Opiliones: Laniatores: Assamiidae)

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Abstract — The male of *Bandona boninensis* Suzuki, 1974, newly discovered from Yunnan Province, China, is described and illustrated for the first time.

Key words — Taxonomy, new record, Assamiidae, *Bandona*, China.

Introduction

Assamiids are medium-sized to large laniatores with a typical body length of 2–8 mm. The anterior margin of the carapace has a projecting row of five sharp spines and the palpi are flattened and crossed in front of the body. The family Assamiidae currently contains 248 genera and 435 species in the world (Kury 2007) and specimens are often found in forest habitats. However, up to now, no systematic study on Chinese Opiliones has included the assamiids and only one undescribed specimen has been found in Yunnan Province, south China (Song 1992).

The genus *Bandona* was erected by Roewer in 1927 on the basis of a single male specimen of the type species *B. palpalis* Roewer, 1927. Roewer collected the specimen in ‘Siam’, now Thailand, and the genus was long considered monotypic. Suzuki (1985) described the female of *B. palpalis* for the first time during an examination of harvestmen specimens collected from Thailand.

Suzuki (1974) described and illustrated in detail a new species, *B. boninensis*, based on a single female holotype collected from Ômura, Is. Chichi-jima, the Bonin Islands, Japan. When Suzuki examined the specimens that were collected during a 1977 expedition from the same Island, he also found only 22 female specimens, and speculated that the species may reproduce parthenogenically (Suzuki 1974; Suzuki 1978). In 1991 Tsurusaki, during a faunal survey of the Bonin Islands, also found only females, reinforcing Suzuki’s hypothesis of parthenogenesis (Tsurusaki 1991).

To date, the genus *Bandona* has two species, mainly distributed in Thailand (Surat Thani ‘=Bandon’, Doi Suthep, Thap Khwang and Tham Chiang Dao) and Japan (Bonin Islands) (Fig. 17) (Roewer 1927; Roewer 1935; Suzuki 1974; Suzuki 1978; Suzuki 1985; Suzuki & Stone 1986; Tsurusaki 1991).

Recently, July 2010, while exploring several locations in Yunnan Province, south China, we collected several specimens of Assamiidae. After detailed examination of those

specimens, we concluded that they are conspecific with *Bandona boninensis* which has been known from the Bonin Islands alone. Moreover, interestingly we found a single male among a total of 20 specimens of the species. In this paper we describe the first male and females of the species, which will be the first record of the species in China as well as Continental Asia.

Methods

Specimens are preserved in 75% ethanol, and were examined and drawn under a Leica M165c stereomicroscope equipped with drawing tube. The genitalia were placed first in hot lactic acid followed by distilled water to expand those parts for observation (Schwendinger & Martens 2002). The specimens examined are deposited in the Museum of Hebei University, Baoding, China (MHBUS). All measurements are given in mm.

Bandona boninensis Suzuki 1974

(Figs. 1–16)

Bandona boninensis Suzuki 1974, pp. 130–133, figs. 1–8; Suzuki 1978, pp. 179–180; Tsurusaki 1991, pp. 220–221, fig. 1.

Material examined. One male, nine females, CHINA: Yunnan Province, Jingdong County, Wenlong Town, about 1284 m alt., 24°38′N, 100°44′E, 3 Aug. 2010, C. Zhang and Y. W. Zhao leg. (MHBUS); 10 females, Zhenyuan County, Gucheng Town, about 1014 m alt., 23°43′N, 101°08′E, 28 Jul. 2010, X. X. Zhang and J. F. Hu leg. (MHBUS).

Description. Somatic characters are almost the same as those in the type specimen of *B. boninensis*, well described by Suzuki (1974). Therefore, we here describe only certain features but not habitus (dorsum or venter), coloration, or legs.

Male. Habitus as in Figs. 1, 8.

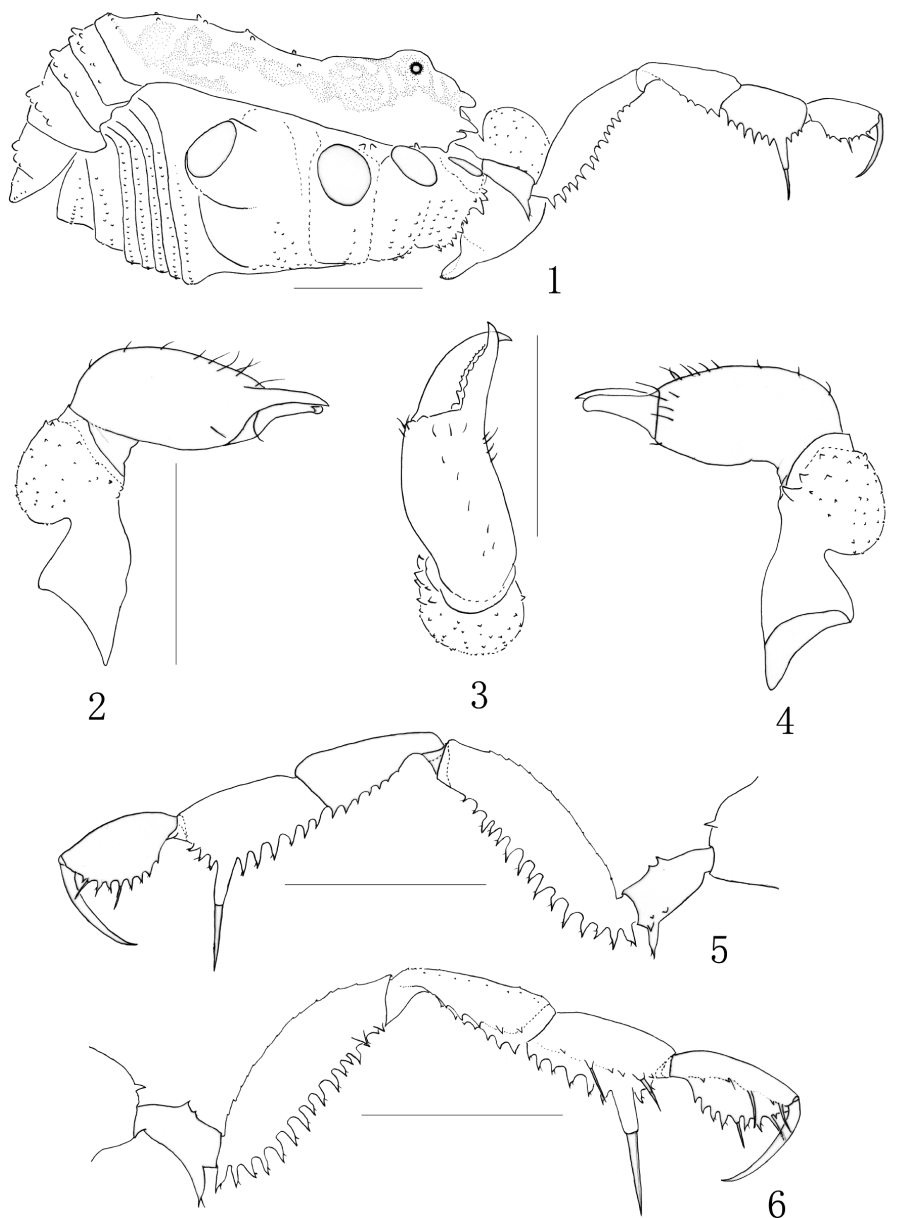


Fig. 1–6. *Bandona boninensis* Suzuki, 1974. 1. Male body, lateral view. 2. Left chelicera, male, prolateral view. 3. Same, dorsal view. 4. Same, retrolateral view. 5. Left palp, male, retrolateral view. 6. Same, prolateral view. Scale=1 mm.

Chelicera (Figs. 2–4). Proximal segment relatively long, visibly swollen disto-dorsally, with scattered tiny spinules, of which the distal ones are slightly larger; and with one large spinule near the ventral margin of the retrolateral surface. Second segment unarmed, hairy.

Palpi (Figs. 5–7) crossed and flattened. Coxa with one tooth dorsally. Trochanter with one setiferous tubercle and small accessory teeth ventrodistally; also with two teeth dorsally. Femur ventrally armed with a row of 15 homogeneous setiferous tubercles, prolatero-distally with two setiferous tubercles and dorsal margins minutely serrate. Patella armed ventrally with five prolateral and seven retrolateral setiferous tubercles, respectively. Tibia armed prolaterally with a row of two slightly enlarged and four

small setiferous tubercles and retrolaterally with a row of one fairly enlarged and nine setiferous tubercles. Tarsus prolaterally armed with a row of two slightly enlarged and three small setiferous tubercles and retrolaterally with a row of two slightly enlarged and seven small setiferous tubercles.

Penis (Figs. 12–15) long and slender, its shaft widened distally. Ventral plate (*VP*) with a median cleft, setae arranged as shown in Figs. 13–15. Dorsally with a spiny funnel (*SF*) (“Stacheltrichter” in Martens 1977) with many thin spines. Laterally, stylus (*S*) appears apically beak-like, even as a bird head, and both sides with a winglike, transparent, membranous-film; seminal canal (*SC*) visible (“Samenkanal” in Martens 1977).

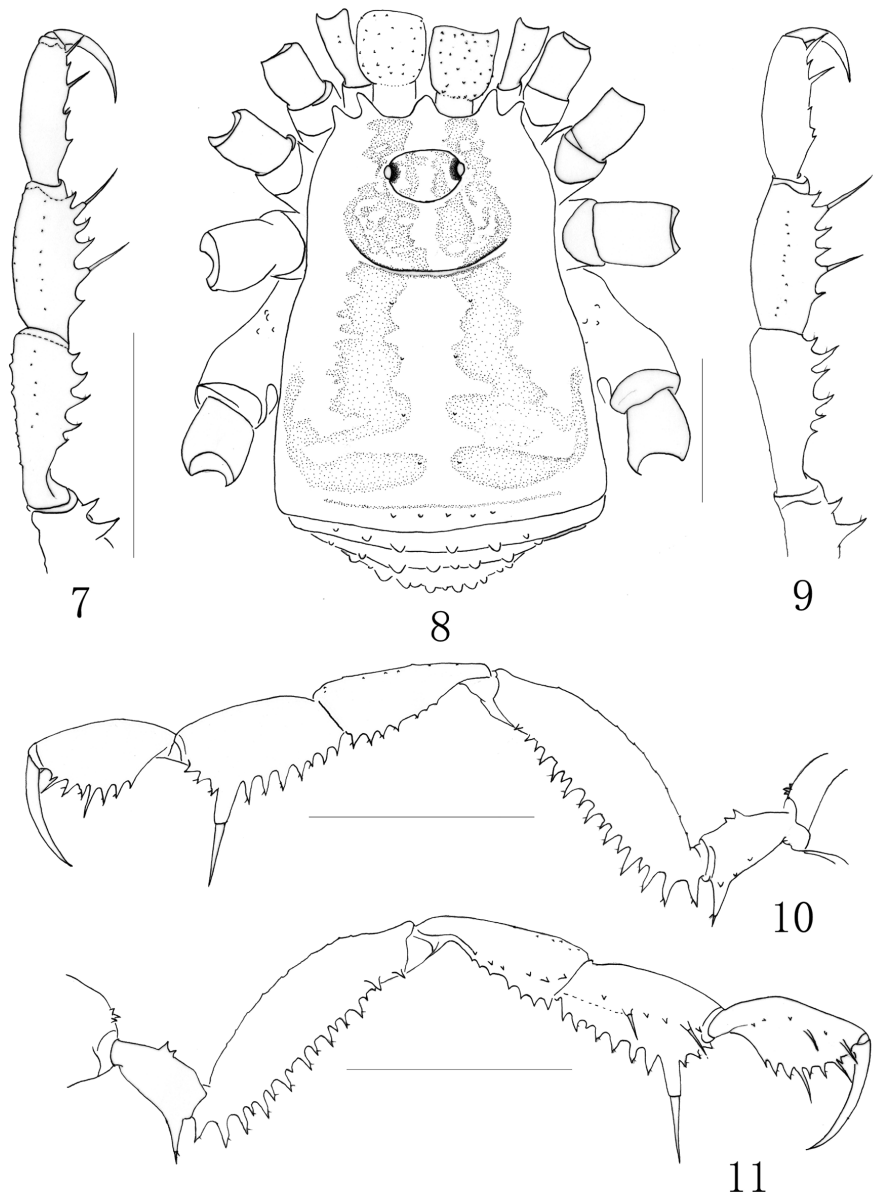


Fig. 7–11. *Bandona boninensis* Suzuki, 1974. 7. Dorsal view of patella, tibia and tarsus of left palpus, male. 8. Male body, dorsal view. 9. Dorsal view of patella, tibia and tarsus of left palpus, female. 10. Left palpus, female, retrolateral view. 11. Same, prolateral view. Scale = 1 mm.

Female. Similar to male in coloration and general appearance but body size variable as some are smaller, others larger than the male. See Suzuki (1974) for a detailed morphological description.

Ovipositor as illustrated, Fig. 16. Each lobe with two ventral and three dorsal setae all of which are bifurcated at tip.

Measurements: male (female in parentheses): body 3.47 (3.82) long, 2.35 (2.09) wide at the widest portion, scutum 2.81 (2.70) long; eye tubercle 0.35 (0.35) long, 0.53 (0.55) wide. Palpus claw 0.50 (0.50) long. Penis 1.00 long. Tarsal formula: 7/16/6/7 (8/16/6/7). Measurements of left palpus and right legs as in Table 1.

Distribution. China (Yunnan), Japan (the Bonin Islands)

Variation. Size range of females (n=19). Tarsal formula: 6–8/13 or 15–17/6/7. Minimum (maximum in parentheses): body 3.06 (4.85) long, 2.14 (2.70) wide at the widest portion, scutum 2.55 (2.75) long; eye tubercle 0.35 (0.35) long, 0.50 (0.50) wide. Palpal claw 0.45 (0.50) long. Measurements of left palpus and right legs as in Table 2.

Discussion

Bandona boninensis was first described by Suzuki (1974) based on a single female holotype collected from Ômura, Is. Chichi-jima, the Bonin Islands, Japan. Suzuki (1974) pointed out then that “this species is closely related to *B. palpalis* Roewer, 1927, it differs by having one prominent spine-like tubercle distally on the retrolateral surface of the

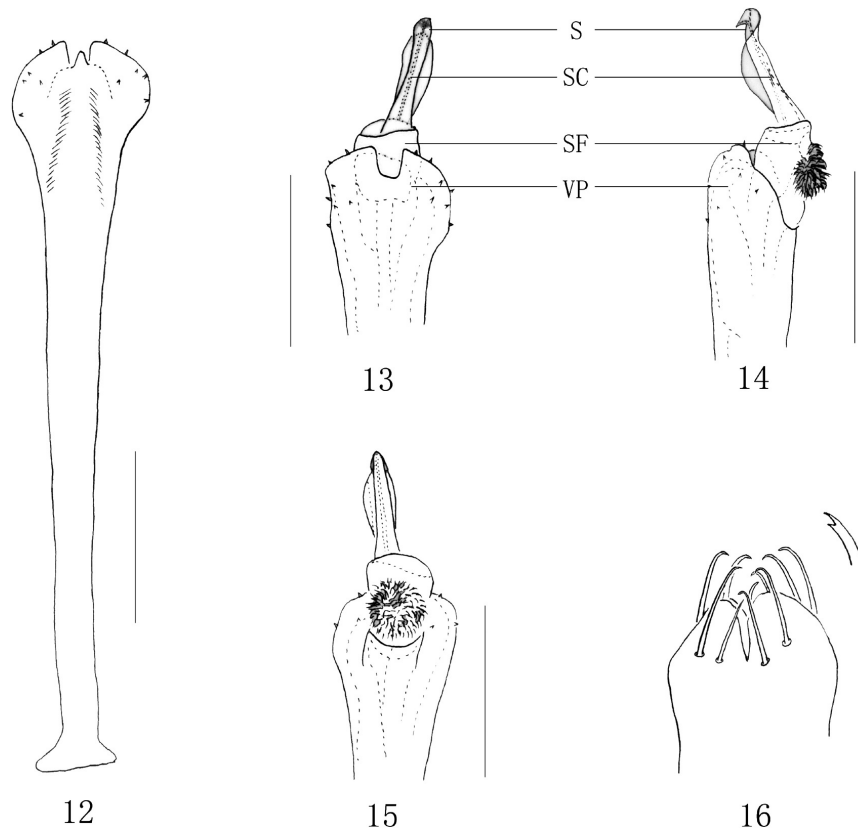


Fig. 12–16. *Bandonia boninensis* Suzuki, 1974. 12. Whole penis, ventral view, unexpanded. 13. Distal part of penis, ventral view, expanded. 14. Same, lateral view. 15. Same, dorsal view. 16. Ovipositor. Scale=0.5 mm.

Table 1. Palpus and legs measurements of male (female)

	Trochanter	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palpus	0.45(0.40)	1.25(1.25)	0.75(0.80)	0.63(0.75)		0.60(0.63)	3.68(3.83)
Leg I	0.41(0.38)	3.06(2.81)	0.77(0.61)	2.40(2.19)	3.52(3.32)	1.43(1.43)	11.59(10.74)
Leg II	0.51(0.38)	5.71(5.51)	0.82(0.97)	5.00(4.95)	5.50(5.61)	3.26(3.37)	20.80(20.79)
Leg III	0.51(0.50)	3.98(3.77)	0.92(0.82)	2.70(2.65)	3.93(3.83)	1.63(1.68)	13.67(13.25)
Leg IV	0.51(0.50)	6.02(5.76)	1.07(0.97)	4.03(3.83)	5.71(5.81)	1.94(2.04)	19.28(18.91)

Table 2. Palpus and legs measurements of the smallest female (the largest female)

	Trochanter	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palpus	0.40(0.50)	1.20(1.25)	0.73(0.78)	0.65(0.70)		0.58(0.63)	3.56(3.86)
Leg I	0.40(0.43)	2.55(2.81)	0.71(0.77)	2.04(1.94)	3.01(3.26)	1.38(1.43)	10.09(10.64)
Leg II	0.40(0.43)	5.10(5.36)	0.82(0.92)	4.69(4.90)	5.10(5.71)	2.75(3.21)	18.86(20.53)
Leg III	0.50(0.50)	3.57(3.72)	0.77(0.87)	2.45(2.55)	3.57(3.77)	1.53(1.53)	12.39(12.94)
Leg IV	0.50(0.50)	5.65(5.41)	0.92(1.02)	3.57(3.83)	5.30(5.51)	1.79(1.68)	17.73(17.95)

first cheliceral segment and one bifid tooth on the dorsal surface of the trochanter of palpus". Additional specimens (a total of 31 females and 27 juveniles) of the species were obtained also from other sites of Is. Chichi-jima (Suzuki 1978, Tsurusaki 1991) and Is. Ani-jima of the same islands (Tsurusaki 1978). Among those specimens no males were found and all were taken from various environments including under stones on the vegetated coral reef, from the stony ground leaf litter and even on the floor in the room. These *B. boninensis* specimens exhibited no distinct morphological variations except for a slight variation in size (Tsurusaki

1991).

As stated earlier, during a faunal survey in July 2010 in Yunnan Province, south China, we collected several *B. boninensis* specimens. Among those found were one male and 19 females collected from two locations. Most female specimens found were similar to the type specimen of Suzuki in coloration and general appearance, although two females resembled the male in habitus. We also found variations in the female palpus (Figs. 9–11), e.g. coxa with three teeth dorsally, tarsus prolaterally with a row of two slightly enlarged and four small setiferous tubercles, and

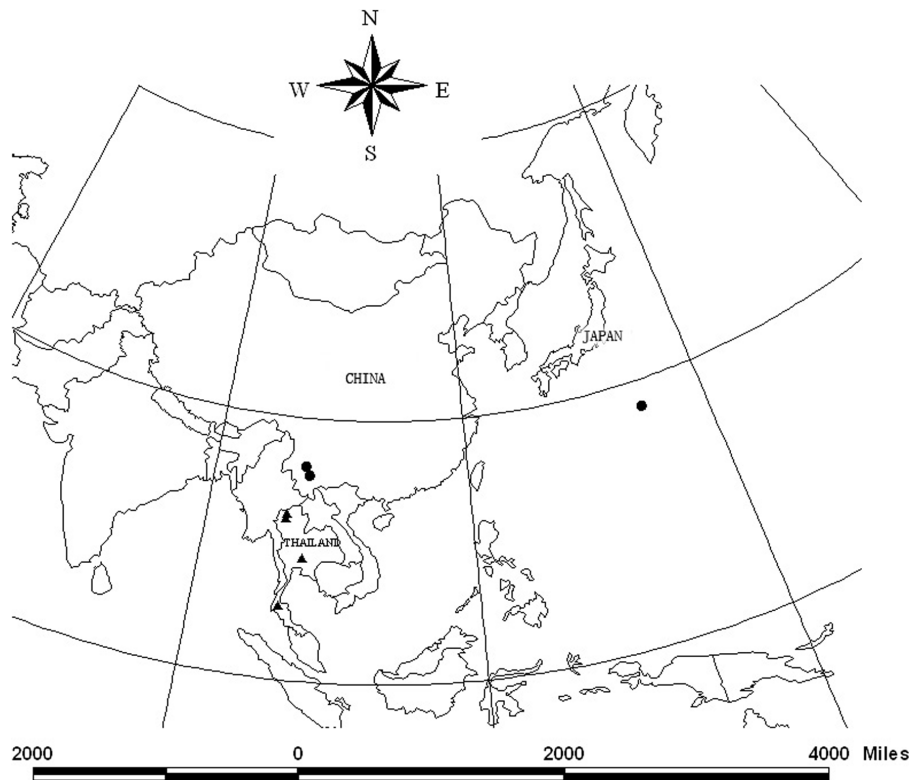


Fig. 17. Distribution of *Bandona boninensis* (black circle) and *Bandona palpalis* (black triangle).

retrolaterally with a row of two slightly enlarged and six small setiferous tubercles. In addition, the palpus of some female specimens closely resembled the single male palpus. Such differences, however, are regarded as individual or geographic variations.

All of our specimens of *B. boninensis* were collected under stones, bricks or discarded tiles and often along the road side. Generally, assamiids are generalists compared to other laniatores, which tend to be more demanding of habitat. Assamiids can live in low humidity environs so are able to disseminate more widely. Although the known distribution of this species is currently highly disparate, we may expect that future research will reveal a more accurate and complete bio-geographical picture of this small animal.

Acknowledgments

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